



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,445	02/20/2001	Lu You	50432-022	5047

7590 10/20/2004  
MCDERMOTT, WILL & EMERY  
600 13TH STREET, N.W.  
Washington, DC 20005

EXAMINER

VU, HUNG K

ART UNIT	PAPER NUMBER
----------	--------------

2811

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

COMMISSIONER FOR PATENTS  
UNITED STATES PATENT AND TRADEMARK OFFICE  
P.O. Box 1450  
ALEXANDRIA, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/785,445  
Filing Date: February 20, 2001  
Appellant(s): YOU ET AL.

---

Scott D. Paul  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 07/29/04.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

No amendment after final has been filed.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

The rejection of claims 3 and 4 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

Art Unit: 2811

**(9) Prior Art of Record**

6,475,810	ZHOU ET AL.	11-2002
6,331,479	LI ET AL.	12-2001

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 4 is rejected under 35 U.S.C. 102(e) as being anticipated by Zhou et al. (PN 6,475,810).

Zhou et al. discloses, as shown in Figure 3B, a semiconductor device comprising:

- a first metallization layer (14);
- a first diffusion barrier layer (16) disposed over the first metallization layer;
- a second etch stop layer (18) disposed on and contacting the first diffusion layer;
- a first etch stop layer (20) disposed on and contacting the second etch stop layer;
- a dielectric layer (24) disposed on and contacting the first etch stop layer;

Art Unit: 2811

a via (32) extending through the dielectric layer, the first etch stop layer, the second etch stop layer and the first diffusion barrier layer, wherein the second etch stop layer has thickness of about 50 angstroms and 1,000 angstroms (within the range of at least 50 angstrom to about 120 angstroms) [Figure 5 and Col. 3, lines 4-5. Also note that layer 20 is capable of use as the etch stop layer].

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou et al. (PN 6,475,810) in view of Li et al. (PN 6,331,479).

Zhou et al. discloses the claimed invention including the semiconductor device as recited in the rejection above. Zhou et al. further discloses the second etch stop layer includes silicon carbide and silicon oxynitride. Zhou et al. does not disclose the second etch stop layer includes silicon oxide. However, Li et al. discloses a second etch stop layer (88) includes silicon carbide, silicon oxynitride and silicon oxide [Col. 4, lines 42-49]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute silicon carbide or silicon oxynitride of Zhou et al. with silicon oxide, such as taught by Li et al. because silicon carbide, silicon oxynitride and silicon oxide are commonly used as the etch stop layer and they are interchangeable.

**(11) Response to Argument**

Appellant argued, at page 6 of the Remarks, that Zhou et al. discloses layer (16) as an etch stop layer, not a diffusion layer. This argument is not convincing because it is well-recognized in the semiconductor art that the etch stop layer (16) of Zhou et al. can function as a diffusion layer. That is layer (16) can act either as the etch stop layer to protect the metal layer (14) from etching, and at the same time, as the diffusion barrier to prevent the metal layer (14) from diffusing into the subsequently formed dielectric layer. Appellant has not provided any evidence that the etch stop layer (16) of Zhou et al. cannot function as the diffusion layer. In absence of such evidence, it is prima facie obvious that the etch stop layer of Zhou et al. also acts as the diffusion barrier. Note that the present specification also discloses that layer 111 can function either as the etch stop layer or as the diffusion layer. Li et al. (PN 6,331,479) is cited to show that layer (76) can function either as the etch stop layer or as the diffusion layer.

Appellant argued, at page 7 of the Remarks, that Zhou et al. discloses layer (20) as a dielectric layer, not an etch stop layer, and layer (22) as an etch stop layer, not a dielectric layer. This argument is not convincing because Zhou et al. discloses, at Col. 3, lines 8-10, a dielectric layer (20) can be comprised of one, or several insulating layers and/or etch stop layers. Therefore, it clearly shows that the dielectric layer (20) can be the etch stop layer and the etch stop layer can be the dielectric layer.

Art Unit: 2811

Appellant argued, at pages 8 and 9 of the Remarks, that if layer 18 of Zhou et al. is modified to be formed from silicon oxide then how could a silicon oxide layer (18) act to stop the etching of a silicon oxide layer (20)? This argument is not convincing for the following reasons: first, it is noted that Zhou et al. discloses, at Col. 3, lines 8-22, that the first etch stop layer (20) can be composed of any known dielectric material, doped silicon oxide or silicon oxide. Therefore, the first etch stop layer (20) is not necessarily composed of silicon oxide. Second, the second etch stop layer (18) is used as the supplemental etch stop layer in case the first etch stop layer (20) is not able to stop the etching.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., feature (18) acts to stop the etching of a silicon oxide feature (20)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

For the above reasons, it is believed that the rejections should be sustained.

Application/Control Number: 09/785,445

Page 7

Art Unit: 2811

Respectfully submitted,

Hung Vu

Vu

October 8, 2004

Conferees

Eddie Lee

Olik Chaudhuri

Hung Vu Vu

EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

Douglas E Ringel

Kenyon & Kenyon

1500 K Street NW

Washington, DC 20005